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Indian Standard

SPECIFICATION FOR STEEL WIRE FOR STAPLES, PINS AND CLIPS

(First Revision)

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MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

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Indian Standard

SPECIFICATION FOR STEEL WIRE FOR STAPLES, PINS AND CLIPS

(First Revision)

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AMENDMENT NO. 1 MAY 1984
TO
IS : 4224-1972 SPECIFICATION FOR STEEL WIRE FOR STAPLES, PINS AND CLIPS

(First Revision)

Alterations

(*Page* 3, *clause* **1.1**) — Substitute the following for the existing matter:

'**1.1** This standard covers the requirements for three types of steel wire of round, square, rectangular or any other shape used for staples, pins and clips for various purposes.'

(*Page* 4, *clause* **3.1**) — Substitute the following for the existing matter:

'**3.1** The material, when analysed either by the method specified in the relevant parts of IS : 228* or any other established instrumental/chemical method shall have the chemical composition as given in Table 1. In case of dispute, the procedure given in IS : 228* and its relevant parts shall be the referee method.'

(*Page* 4, *foot-note*) — Substitute the following for the existing foot-note:

'Method of chemical analysis of steel (*second revision*) (issued in various parts).

(*Page* 4, *clause* **4.1**, *line* 2) — Delete the word 'round,'.

(*Page* 4, *clause* **5.1**) — Substitute the following for the existing matter:

'**5.1 Round Wires** — Various standard sizes of round wire and their tolerances are given below:

Diameter mm	*Tolerance* mm
0·40 0·45 0·50 0·55	±0·010

Diameter	*Tolerance*
mm	mm
0·60	±0·015
0·65	
0·70	
0·75	
0·80	
0·85	±0·020'
0·90	
0·95	
1·00	
1·10	
1·20	

Addendum

(*Page* 4, *clause* **5.1**) — Add the following new clauses after **5.1**:

' **5.2 Rectangular Wire** — The cross sectional dimensions of the various sizes of rectangular wire and their tolerances are given below:

Thickness	*Width*	*Tolerance on Thickness or Width*
mm	mm	mm
0·35	0·50	± 0·05
0·45	0·70	
0·55	0·75	
0·55	0·80	

5.3 Sizes and tolerances of wires of shape other than round and rectangular shall be as per agreement between the supplier and the purchaser. '

(SMDC 5)

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Indian Standard
SPECIFICATION FOR STEEL WIRE FOR STAPLES, PINS AND CLIPS
(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 5 February 1972, after the draft finalized by the Wrought Steel Products Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 This standard was first issued in 1967. As a result of the experience gained during these years, it has been decided to make certain modifications in the chemical composition as also to modify the tensile properties of the material in this revision. The scope of the standard has also been enlarged to cover pins and clips in addition to staples which were originally covered. The important modifications pertain to the adoption of SI units in this revision.

0.3 This standard contains clauses **5.1**, **6.1** and **6.1.1** which call for agreement between the purchaser and the manufacturer.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers the requirements for three types (*see* Table 1 and **7.1**) of steel wire used for staples, pins and clips for various purposes.

2. SUPPLY OF MATERIAL

2.1 General requirements relating to supply of material shall conform to IS : 1387-1967†.

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*Rules for rounding off numerical values (*revised*).

†General requirements for the supply of metallurgical materials (*first revision*).

3. CHEMICAL COMPOSITION

3.1 The material, when analyzed in accordance with IS : 228-1959*, shall conform to the chemical composition specified in Table 1.

TABLE 1 CHEMICAL COMPOSITION

Type	Constituent, Percent, *Max*			
	Carbon	Manganese	Sulphur	Phosphorus
Types 1 and 2	0·25	0·90	0·06	0·06
Type 3	0·60	0·90	0·05	0·05

4. FREEDOM FROM DEFECTS

4.1 All finished wires shall be well and cleanly drawn to the dimensions specified. The wire shall be round, free from splits, surface flaws, rough, jagged and imperfect edged and other harmful surface defects.

4.2 The wire surface should be bright shining.

5. SIZES AND TOLERANCES

5.1 The wire shall be supplied in sizes as specified by the purchaser. Various standard sizes of wire and their tolerances are given below:

Diameter mm	*Tolerance* mm
0·40	±0·010
0·45	
0·50	
0·55	
0·60	±0·015
0·65	
0·70	
0·75	
0·80	
0·85	±0·020
0·90	
0·95	
1·00	
1·10	
1·20	

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*Methods of chemical analysis of pig iron, cast iron, and plain carbon and low-alloy steels (*revised*).

6. FINISH

6.1 The material shall be supplied in bright drawn, copper-coated, galvanized or tin-coated finish as agreed to between the purchaser and the manufacturer.

6.1.1 The galvanized coating of steel wire shall conform to the requirements of light coating as given in IS : 4826-1968*. The coating test for other finishes shall be as agreed to between the purchaser and the manufacturer.

7. PHYSICAL TESTS

7.1 Tensile Test — Tensile test of steel wire, when specified, shall be done in accordance with IS : 1521-1960†. Values of tensile strength of cold drawn steel wire shall be as follows:

	Tensile Strength		*Usage*
	N/mm^2	(kgf/mm^2)	
Type 1	590/880	(60/90)	Light duty staples
Type 2	685/980	(70/100)	Pins and clips
Type 3	1 175/1 570	(120/160)	Heavy duty staples

$$1\,\text{N/mm}^2 = 1\,\text{MN/m}^2 = 0{\cdot}102\,0\ \text{kgf/mm}^2$$

7.1.1 *Number of Tensile Tests* — One tensile test shall be carried out for every 10 coils or part thereof and where the wire has been cut into lengths, for every 10 bundles or part thereof.

7.2 Reverse Bend Test — One bend test shall be carried out for every 5 tonnes or part thereof of the finished wire. The test piece, when tested in accordance with IS : 1716-1971‡, shall withstand without sign of failure being bent forward and backward three times through 180° over a diameter equal to six times the wire diameter, the first bend of 90°, not being counted.

8. RETEST

8.1 Should any one of the test pieces first selected fail to pass any of the tests specified in this standard, two further samples shall be selected for testing in respect of each failure. Should the test pieces from both these additional samples pass, the material represented by the test samples shall be deemed to comply with the requirements of that particular test.

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*Specification for galvanized coatings on round steel wires.

†Method for tensile testing of steel wire.

‡Method for reverse bend testing of steel wire (*first revision*).

Should the test pieces from either of these additional samples fail, the material represented by the test samples shall be considered as not having complied with this standard.

9. PACKING AND MARKING

9.1 Each coil or bundle of wire shall be bound and fastened compactly and shall have a tag legibly marked with the type, finish, size, length, weight and the name of the manufacturer.

9.1.1 The material may also be marked with the ISI Certification Mark.

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